EXPLANATION OF DATA TABLES FOR GULF OF ALASKA SHELF ASSESSMENT PROVINCE

RESULTS

LOG-N PARAMS (PORE) — Key mathematic parameters that describe log-normal probability distributions for volume of hydrocarbon-bearing rock, in acre-feet, for each play as reported in the **PORE** module of **GRASP**.

mu — Natural logarithm of F50 value of log-normal distribution for volume of hydrocarbon-bearing rock, or "μ", for the subject play. **mu** = ln F50. [Note: distribution **mean** = $e^{(mu + 0.5[sig. sq.])}$.]

sig. sq. — The variance of the log-normal distribution for volume of hydrocarbon-bearing rock, or "σ^2", for the subject play. **sig. sq.** = $\{\ln [0.5((F50/F16)+(F84/F50))]\}^2$.

N (MPRO) — Number of hydrocarbon pools calculated for the plays by the **MPRO** module of **GRASP** from inputs for probability distributions of prospect numbers and geologic chances of success (approximately the product of play and prospect chances of success) . The maximum (**Max**) number of pools for each play was entered into the **MONTE1** module of **GRASP** to fix the number of pools aggregated to calculate play resources.

Reserves — Sums of recoverable oil and gas volumes for pools within the play, including both proven and inferred reserve categories. A "prop" entry indicates that the reserve data are proprietary.

BCF — Billions of cubic feet of gas, recoverable, at standard (surface) conditions (here fixed at a temperature of 60° Fahrenheit or 520° Rankine, and 14.73 psi atmospheric pressure).

MMB — Millions of barrels of oil, recoverable, at standard (surface) conditions.

Undiscovered Potential — Risked, undiscovered, conventionally recoverable oil and gas resources of the play, here reported at **Means** of probability distributions.

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Mean Pool Sizes of Ranks 1 to 3 Unrisked (or conditional) mean volumes of recoverable oil and gas in the three largest pools in the play.

PLAY INPUT DATA

F100.....F00 Fractiles for values within probability distributions entered to **GRASP** for calculations of play resources. Four-point distributions (F100, F50, F02, F00) generally indicate that calculations were conducted using log-normal mathematics. Eight-point distributions generally indicate that calculations were conducted using Monte Carlo mathematics. Choice of mathematic approach was in most cases the option of the assessor.

Prospect Area Maximum area of prospect closure, or area within spill contour, in acres. Probability distributions for prospect areas were generally based on distributions assembled independently for each play from large numbers of prospects mapped with seismic reflection data.

Trap Fill Trap fill fraction, or fraction of prospect area in which the reservoir is predicted to be saturated by hydrocarbons.

Pool Area Areal extent of hydrocarbon-saturated part of prospect, in acres. Calculated using **PRASS**, or **SAMPLER** module of **GRASP**, to integrate input probability distributions for prospect areas and trap fill fractions.

Pay Thickness Thickness of hydrocarbon-productive part of reservoir within pool areas, in feet. Probability distributions for prospect areas, trap fill fractions, and pay thicknesses are integrated in the **PORE** module of **GRASP**, to calculate a probability distribution for volume of hydrocarbon-bearing rock, in feet, within the play as reported above under **LOG-N PARAMS (PORE).**

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Oil Yield (Recov. B/Acre-Feet) Oil, in barrels at standard (surface) conditions, recoverable from a volume of one acre-foot of oil-saturated reservoir in the subsurface. Oil yield probability distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, oil saturations, oil shrinkage factors (or "Formation Volume Factors"), and oil recovery efficiencies.

Gas Yield (MMCF/Ac.-Ft.) Gas, in millions of cubic feet at standard (surface) conditions, recoverable from a volume of one acre-foot of gas-saturated reservoir in the subsurface. Distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, gas saturations, reservoir pressures, reservoir temperatures (in degrees Rankine), gas deviation ("Z") factors, combustible fractions (that exclude noncombustibles such as carbon dioxide, nitrogen, etc.), and gas recovery efficiencies.

Solution Gas-Oil Ratio (CF/B) Quantity of gas dissolved in oil in the reservoir that separates from the oil when brought to standard (surface) conditions, in cubic feet recovered per barrel of produced oil.

Gas Cond. (B/MMCF) Quantity of liquids or condensate dissolved in gas in the reservoir that separates from the gas when brought to standard (surface) conditions, in barrels recovered per million cubic feet of produced gas.

Number of Prospects..... Probability distributions for numbers of prospects in plays, generally ranging from minimum values (F99) representing the numbers of mapped prospects, to maximum values (F00) that include speculative estimates for the numbers of additional prospects that remain unidentified (generally stratigraphic prospects, geophysically indefinite prospects, or prospects expected in areas with no seismic coverage).

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Probabilities for Oil, Gas, or Mixed Pools

Oil (OPROB) Fraction of hydrocarbon pools that consist entirely of oil, with no free gas present. Typically, an undersaturated oil pool.

Gas (GPROB) Fraction of hydrocarbon pools consisting entirely of gas, with no free oil present.

Mixed (MXPROB) Fraction of hydrocarbon pools that contain both oil and gas as free phases, the gas usually present as a gas cap overlying the oil.

Fraction of Net Pay to Oil (OFRAC) When a hydrocarbon pool is modeled as a mixed case, with both oil and gas present, the fraction of pool volume that is saturated by oil in the subsurface.

Play Chance Success Probability that the play contains at least one pool of technically-recoverable hydrocarbons (that would flow into a conventional wellbore in a flow test or during production).

Prospect Chance Success The fraction of prospects within the play that are predicted to contain hydrocarbon pools, given the condition that at least one pool of technically-recoverable hydrocarbons occurs within the play.

Play Type (E-F-C) Play classification scheme.

- **E** **Established** play, in which significant numbers of fields have been discovered, providing the assessor with data for pool size distributions and reservoirs sufficient to allow the assessor to model the play with confidence.
- **F** **Frontier** play, where exploration activities are at an early stage. Some wells have already been drilled to test the play concept but no commercial fields have been established.

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C	**Conceptual** play, hypothesized by analysts based on the subsurface geologic knowledge of the area. Such plays remain hypothetical and the play concept has not been tested.

GULF OF ALASKA

				Log-N Params.							
				PORE		N (MPRO)		Reserves		Undiscovered Potentia	
Play				Ac/Ft	Ac/Ft	No. Pools		Gas	Oil	Gas	Oil
No.	Area	UAI Code	Name	mu	sig. sq.	Mean	Max	(BCF)	(MMB)	(BCF)	(MMB)
1	Gulf of Alaska	UAGA0101	Middleton Fold and Thrust Belt	11.62	2.17	3.3	54	* *	* *	456	13
2	Gulf of Alaska	UAGA0201	Yakataga Fold and Thrust Belt	11.99	1.84	3.5	26	* *	* *	805	122
3	Gulf of Alaska	UAGA0401	Yakutat Shelf- Base of Yakataga Fm.	11.42	1.98	6.0	33	* *	* *	669	111
4	Gulf of Alaska	UAGA0501	Yakutat Shelf-Kulthieth Sands	12.09	2.05	7.3	34	* *	* *	1967	308
6	Gulf of Alaska	UAGA0701	Subducting Terrane	11.62	1.96	2.9	15	* *	* *	282	76

		MEAN POOL SIZES OF RANKS 1 TO 3						INPUT DATA					
		Pool #1		Pool #2		Pool #3							
PLAY		Gas	Oil	Gas	Oil	Gas	Oil	Prospect Area (Acres)					
No.	Name	(BCF)	(MMB)	(BCF)	(MMB)	(BCF)	(MMB)	F100	F95	F75	F50	F25	F05
1	Middleton Fold and Thrust Belt	900	25	389	11	246	7	140	1270	3560	7290	14900	41700
2	Yakataga Fold and Thrust Belt	722	111	270	42	149	24	100	1100	2700	5250	10000	27000
3	Yakutat Shelf- Base of Yakataga Fm.	471	83	186	33	106	19	100	480	1350	2800	6700	16500
4	Yakutat Shelf-Kulthieth Sands	1210	179	486	70	264	40	100	980	2600	5000	9700	26000
6	Subducting Terrane	234	56	75	18	39	10	150	690	1900	3700	7500	20000

		INPUT DATA											
PLAY		Prospect Area (Acres)			Trap Fill (Dec. Frac.)								
No.	Name	F02	F01	F00	F100	F95	F75	F50	F25	F05	F02	F01	F00
1	Middleton Fold and Thrust Belt	64400	86000	130000	0.03	0.06	0.10	0.15	0.20	0.33	0.45	0.49	0.70
2	Yakataga Fold and Thrust Belt	39000	49800	100000	0.08	0.15	0.20	0.30	0.40	0.56	0.67	0.70	0.94
3	Yakutat Shelf- Base of Yakataga Fm.	24000	33000	100000	0.08	0.15	0.20	0.30	0.40	0.55	0.67	0.70	0.95
4	Yakutat Shelf-Kulthieth Sands	38000	49000	101000	0.08	0.15	0.20	0.30	0.40	0.55	0.67	0.70	0.95
6	Subducting Terrane	30000	39000	84000	0.08	0.15	0.20	0.30	0.40	0.55	0.67	0.70	0.95

GULF OF ALASKA

PLAY		INPUT DATA													
		Pool Area (Acres)									Pay Thickness (Feet)				
No.	Name	F100	F95	F75	F50	F25	F05	F02	F01	F00	F100	F95	F75	F50	F25
1	Middleton Fold and Thrust Belt	11	143	478	1110	2580	8640	14400	20200	115000	5	28	59	100	170
2	Yakataga Fold and Thrust Belt	26	260	763	1610	3410	10000	15700	21300	99900	5	28	59	100	170
3	Yakutat Shelf- Base of Yakataga Fm.	12	133	415	915	2020	6280	10100	13900	71200	5	28	59	100	170
4	Yakutat Shelf-Kulthieth Sands	24	238	703	1490	3160	9320	14700	19900	94100	4	27	65	120	220
6	Subducting Terrane	15	165	508	1110	2430	7470	12000	16500	82700	5	28	59	100	170

PLAY		INPUT DATA															
		Pay Thickness (Feet)				Oil Yield (Recov. B/Acre-Foot)								Gas Yield (MMCF/Ac.-Ft)			
No.	Name	F05	F02	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	Middleton Fold and Thrust Belt	363	500	619	1844	29	61	86	110	141	200	256	425	0.046	0.137	0.226	0.322
2	Yakataga Fold and Thrust Belt	363	500	619	1844	32	72	106	139	182	267	350	609	0.088	0.267	0.450	0.646
3	Yakutat Shelf- Base of Yakataga Fm.	363	500	619	1844	34	78	115	150	196	289	378	658	0.041	0.152	0.280	0.428
4	Yakutat Shelf-Kulthieth Sands	526	760	971	3395	47	97	137	174	221	312	397	650	0.070	0.222	0.382	0.557
6	Subducting Terrane	363	500	619	1844	32	72	106	139	182	267	350	609	0.053	0.165	0.280	0.406

PLAY		INPUT DATA															
		Gas Yield (MMCF/Ac.-Ft)				Solution Gas Oil Ratio (CF/B)								Gas Cond. (B/MMCF)			
No.	Name	F25	F05	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	Middleton Fold and Thrust Belt	0.457	0.757	1.080	2.230	380	600	810	1010	1290	1770	2250	2760	11	19	24	28
2	Yakataga Fold and Thrust Belt	0.929	1.560	2.260	4.770	470	720	960	1190	1460	1850	2300	2850	20	35	42	52
3	Yakutat Shelf- Base of Yakataga Fm.	0.653	1.200	1.840	4.410	370	600	810	1020	1320	1900	2300	2900	20	35	42	52
4	Yakutat Shelf-Kulthieth Sands	0.812	1.400	2.040	4.460	300	520	730	960	1250	1800	2250	3000	20	35	42	52
6	Subducting Terrane	0.586	0.995	1.440	3.080	300	520	730	960	1250	1800	2250	3000	20	35	42	52

GULF OF ALASKA

		INPUT DATA											
PLAY		Gas Cond. (B/MMCF)				Number of Prospects in Play							
No.	Name	F25	F05	F01	F00	F99	F95	F75	F50	F25	F05	F01	F00
1	Middleton Fold and Thrust Belt	31	38	44	55	22	26	32	37	43	52	61	88
2	Yakataga Fold and Thrust Belt	55	68	75	100	9	11	16	19	23	30	36	54
3	Yakutat Shelf- Base of Yakataga Fm.	55	68	75	100	16	20	24	29	33	41	46	67
4	Yakutat Shelf-Kulthieth Sands	55	68	75	100	19	22	28	32	38	46	54	79
6	Subducting Terrane	55	68	75	100	7	8	10	12	14	17	20	28

		INPUT DATA						
		Probabilities for Oil, Gas, or Mixed Pools			Fraction of Net	Play	Prospect	
PLAY		Oil	Gas	Mixed	Pay to Oil	Chance	Chance	Play Type
No.	Name	(OPROB)	(GPROB)	(MXPROB)	(OFRAC)	Success	Success	E - F - C
1	Middleton Fold and Thrust Belt	0	0.9	0.1	0.10	0.18	0.48	C
2	Yakataga Fold and Thrust Belt	0	0	1	0.40	0.60	0.29	C
3	Yakutat Shelf- Base of Yakataga Fm.	0	0	1	0.35	0.65	0.31	C
4	Yakutat Shelf-Kulthieth Sands	0	0	1	0.30	0.80	0.27	C
6	Subducting Terrane	0	0	1	0.45	0.90	0.25	C